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SOME BIRDS OF ARIZONA.

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GENUS *Harporhynchus* CABANIS.

RED-VENTED THRASHER. *Harporhynchus crissalis*.

LECONTE'S THRASHER. *Harporhynchus lecontei*.

PALMER'S THRASHER. *Harporhynchus curvirostris palmeri*.

BENDIRE'S THRASHER. *Harporhynchus bendirei*.

PROFESSOR COUES has already pointed out (Birds of the Colorado Valley, p. 61), the especial interest attaching to the genus *Harporhynchus*, as represented in this general region. This genus, he states, "reaches its highest development in the Colorado Basin, where nearly all the known species occur, some of them in abundance; while several of them are entirely confined, so far as we now know, to this region. As much can be said of no other genus. *Harporhynchus* is, in fact, the leading feature of the Colorado avifauna, whether we consider the relative number of species there represented, or the extremely local distribution of some of them. The fringilline genus *Pipilo* offers much the same case; and there is a further singular parallelism between the two. Both

are represented, in the United States at large, by a single species, heavily and even richly colored, in comparison with the pale dull shades of the numerous species or races of the Coloradan region : in both cases there are species restricted to this Basin ; in both, rounded wings shorter than the graduated tail, large strong feet, and terrestrial habits are conspicuous features in comparison with their respective allies. The parallel might even be pushed to the length of recognizing individual species of one genus as representatives of those of the other. *Pipilo aberti* is the counterpart of *H. crissalis* and several others are almost as clearly analogous."

Although highly characteristic of the Arizona avifauna, this genus is represented over the northeastern half of the Territory by a single species (*H. crissalis*), and that of local distribution, avoiding high altitudes, and hence absent from many large areas ; but the southwestern half of Arizona, in greater part occupied by open desert plains extending eastward from the Colorado River, is inherited by all of the four species above named, occurring in greater or less abundance. Another species ("*Harporhynchus curvirostris [verus]*") is attributed to Arizona by Dr. Coues in the second edition of his 'Check List of North American Birds,' page 6 ; but, so far as known, typical *H. curvirostris* is limited, in its United States range, to the valley of the Rio Grande.

All of the Arizona species are of comparatively late discovery, the types of *H. crissalis* and *H. lecontei*, originally described in 1851 and 1858, by Messrs. Lawrence and Henry, respectively, having remained unique for years ; while *H. curvirostris palmeri* and *H. bendirei* remained undescribed until 1872 and 1873, respectively. None of the species became at all well known until quite recently ; but during the past few years much has been done to elucidate their life histories by Captain Bendire, Dr. Palmer, Messrs. Henshaw, Brewster, Stephens, and others.

I have embraced the present opportunity, when giving the results of my own study of the Arizona Thrashers, for which I have enjoyed exceptionally fine opportunities when travelling in various portions of the Territory during their breeding season, to bring together the scattered literature, and present something like a connected account of each species.

Without dwelling upon the characteristics of the genus as a whole, I will pause to notice some of the peculiarities of the species under consideration. All agree in the characters of an elon-

gated, graduated tail of somewhat decurved rectrices, and short, rounded wings; but the discrepancy in the relative size and form of the bill and extremities, is considerable. However, a glance at the accompanying table of comparative dimensions and ratios, will show that these four species form a continuous series in the order named. In *H. crissalis* and *H. lecontei*, the elongation of the bill and tail is coincident with the abbreviation of the wings and legs; and the arcuation and slenderness of the bill is exactly correlated to its attenuation, *H. crissalis* having the longest, slenderest and most arcuate bill, while *H. bendirei* has the shortest, stoutest and straightest.

TABLE I.—MEASUREMENTS OF SPECIES, AND RATIO OF THEIR DIMENSIONS TO THEIR ENTIRE LENGTH.

SPECIES.	Number of Specimens.	Length.	Alar Expanse.	Wing.	Tail.	Culmen from Base.	Culmen from Nostril.	Gape.	Tarsus.	Middle Toe and Claw.	Its Claw alone.
DIMENSIONS (Averages).—Males.											
<i>Harporynchus crissalis</i>	12	395.5	326.3	109.7	143.5	38.4	30.4	42	33.9	30.4	8.1
<i>Harporynchus lecontei</i>	3	281	310	101	132	32	24	36	32	30	8.2
<i>Harporynchus curvirostris palmeri</i>	6	293	360	110	126	31.6	24.7	36.8	34.1	33.6	8.8
<i>Harporynchus bendirei</i>	5	260	342	106	121	25.5	19.0	30.7	34	31.2	8
DIMENSIONS (Averages).—Females.											
<i>Harporynchus crissalis</i>	10	303.9	316.7	97.6	142.5	38.1	30.1	41.2	33	30.2	8
<i>Harporynchus lecontei</i>	4	277	312	97	126	34	24	36	31	28.9	8
<i>Harporynchus curvirostris palmeri</i>	2	290	352	112	125	33.2	25.5	38.5	33.7	32.5	9
<i>Harporynchus bendirei</i>	1	260	330	101	122	26	19	30	33	31	9
RATIOS.—Males.											
<i>Harporynchus crissalis</i>	1.00	1.07	.33	.47	.13	.10	.10	.14	.11	.10	.027
<i>Harporynchus lecontei</i>	1.00	1.12	.36	.46	.11	.08	.13	.11	.11	.11	.029
<i>Harporynchus curvirostris palmeri</i>	1.00	1.23	.38	.43	.11	.08	.13	.13	.12	.12	.030
<i>Harporynchus bendirei</i>	1.00	1.29	.39	.45	.10	.07	.11	.11	.13	.12	.030
RATIOS.—Females.											
<i>Harporynchus crissalis</i>	1.00	1.04	.32	.47	.13	.10	.10	.14	.11	.10	.026
<i>Harporynchus lecontei</i>	1.00	1.13	.35	.45	.12	.09	.13	.13	.11	.10	.029
<i>Harporynchus curvirostris palmeri</i>	1.00	1.22	.39	.43	.11	.09	.13	.13	.12	.11	.031
<i>Harporynchus bendirei</i>	1.00	1.27	.39	.47	.10	.07	.12	.12	.13	.12	.030

H. crissalis and *H. redivivus lecontei* are remarkable for their plain, unspotted plumage; while the former is unique in the genus in producing immaculate eggs.

H. crissalis is an inhabitant of wooded hillsides, rugged cañons, and the borders of streams at intermediate altitudes; but the other species are found in low, desert plains, spending much time among the cactuses.

Harporynchus crissalis HENRY. RED-VENTED THRASHER.

Toxostoma crissalis HENRY, Pr. Phila. Acad. X, May, 1858, 117 ("New Mexico").

Harporynchus crissalis BAIRD, Birds N. Am. 1858, pp. 351, 923; ed. of 1860, pl. S2 (Mimbres to Rio Grande, N. M., Henry; Fort Yuma, Cal., Ives).—HENRY, Pr. Phil. Acad. XI, 1859, p. 107.—SCL. P. Z. S. 1859, p. 339 (critical).—BAIRD, Review Am. Birds. 1864, pp. 47, 352 ("Region of the Gila River, to Rocky Mts.").—COUES, Proc. Phila. Acad. XVIII, 1866, p. 65 (Arizona).—COOPER, Am. Nat. III, 1869, p. 473; *ib.* Birds Cal. I, 1870, p. 18, fig.—COUES, Key, 1872, p. 75 ("Valley of the Rio Grande and Colorado"); *ib.* Am. Nat. VI, 1872, p. 370 (descr. nest and eggs); VII, 1873, p. 328, fig. 67.—BREWER, Proc. Bost. Soc. Nat. Hist. XVI, May 21, 1873 (descr. eggs, taken in Arizona, by Capt. Charles Bendire).—BD. BR. & RIDGW. N. Am. Birds, I, 1874, p. 47; III, 1874, p. 500 ("Region of the Gila River, to Rocky Mountains; Southern Utah").—YARROW & HENSH. Rep. Orn. Specs. 1874, p. 6.—HENSH. Rep. Orn. Specs. 1874, p. 40 (Saint George, Utah), p. 97 (Arizona); *ib.* List Birds Arizona, 1875, p. 154; *ib.* Zool. Expl. W. 100 Merid. 1876, p. 158 (Arizona).—COUES, Birds Col. Val. 1878, p. 73, fig. 13.—STEPHENS, Bull. N. O. C. III, April, 1878, p. 93 (Gila River in New Mexico, and in Arizona).—RIDGW. Catal. Birds N. Am. Proc. U. S. Nat. Mus. III, 1880, p. 167.—BREWST. Bull. N. O. C. VI, 1881, p. 72; VII, 1882, pp. 69, 74.—COUES, Check List N. Am. Birds, 1882, p. 26.

Harporynchus crissalis BAIRD, Ives's Rep. Colo. Riv. pt. V, 1861, p. 6. *Red-vented Thrasher; Henry's Thrush; Crissal Thrasher*, Authors.

HABITAT.—New Mexico, Arizona, Southern Utah, Nevada and California in the Colorado Valley, and probably extending southward into Sonora, Mexico; absent from such portions of this region as are over 5000 feet in altitude.

DESCRIPTION.—*Adults in breeding dress* (Nos. 4499, ♀ ad., February 18, 1886, and 4502, ♂ ad., February 20, 1886, Fort Verde, Arizona; E. A. M.), Above nearly uniform ashy-brown; below a paler shade of the same but clearer ashy; under tail-coverts and crissum chestnut-rufous, this color

fading as it passes forward to the epigastrium into pale rusty-yellow; tibia and lining of wings washed with the same. The chin, middle of the throat, maxillary stripes and spotting upon cheeks nearly white. There are narrow blackish stripes upon the sides of the throat, cutting off the white maxillary stripes above them. The outer rectrices have conspicuously paler, rusty tips. Under plumage lead-color. Irides brownish straw-color. Bill, blackish, or very dark neutral tint. Legs and feet dusky olivaceous-brown; claws plumbeous-black.

TABLE II.—MEASUREMENTS OF *Harporhynchus crissalis*.

No.	Sex and Age.	LOCALITY.	Date.	Length.	Alar Expanse.	Wing.	Tail.	Culmen from Base.	Culmen from Nostril.	Gape.	Tarsus.	Middle Toe and Claw.	Claw alone.
2712	♂ ad.	Fort Verde, Arizona.	April 10, 1884.	366	330	99	144	404	32	44.5	42	31	0
2719	♂ ad.	" "	April 11, 1884.	395	315	95	140	385	30.5	42	33	30.4	0
2830	♂ ad.	" "	May 2, 1884.	300	327	99	143	38	30	42	35	32	0
2909	♂ ad.	" "	June 4, 1884.	316	330	100	142	43	34	45	35	32	0
3306	♂ ad.	" "	Sept. 10, 1884.	313	322	99	148	38	30	40	33	30	0
3935	♂ ad.	" "	Dec. 17, 1884.	315	330	100	145	39	31.5	43	33	31	0
3748	♂ ad.	" "	Feb. 5, 1885.	290	315	97	137	36	30	42	34	30	0
3767	♂ ad.	" "	Feb. 17, 1885.	315	332	108	152	39	31	41	33	31	0
3938	♂ ad.	Deming, New Mexico.	April 29, 1885.	294	333	105	136	39	31	42	35	30	0
3948	♂ ad.	" "	April 22, 1885.	305	333	102	137	37	30	41	35	30	0
3959	♂ ad.	Chiricahua Mts., Arizona.	April 30, 1885.	298	326	100	150	35	25	40	34	31	0
4502	♂ ad.	Fort Verde, Arizona.	Feb. 20, 1886.	369	330	105	148	38	30	42	34	31	0
2799	♂ ad.	Fort Verde, Arizona.	April 29, 1884.	290	304	92	138	38	26.5	39	31.5	31	0
2831	♂ ad.	" "	May 2, 1884.	267	311	92	134	38	30	41	34	30	0
3015	♂ ad.	" "	June 16, 1884.	300	313	95	133	38	30.5	41	32	31	0
3600	♂ ad.	Near Prescott, Arizona.	Nov. 25, 1884.	305	320	98	148	38	32	41	33	29	0
3604	♂ ad.	Fort Verde, Arizona.	Dec. 3, 1884.	303	317	95	143	39	31	41	34	31	0
3605	♂ ad.	" "	Jan. 10, 1885.	310	330	102	145	36	30	42	34	30	0
3937	♂ ad.	Deming, New Mexico.	April 29, 1885.	313	322	101	147	39	31	43	34	30	0
4479	♂ ad.	Fort Verde, Arizona.	Nov. 13, 1885.	312	320	102	140	41	32	43	33	30	0
4369	♂ ad.	" "	Nov. 28, 1885.	297	307	99	143	36	29	41	33	29	0
4499	♂ ad.	" "	Feb. 18, 1886.	312	323	100	148	38	29	40	33	30	0
Average of twelve males 326.3													
Maximum of twelve males 395.5													
Minimum of twelve males 316													
Average of ten females 316.7													
Maximum of ten females 393.9													
Minimum of ten females 313													
Average of twelve males 38.4													
Maximum of twelve males 42													
Minimum of twelve males 30.4													
Average of ten females 38.1													
Maximum of ten females 41.2													
Minimum of ten females 34													
Average of twelve males 33.9													
Maximum of twelve males 45													
Minimum of twelve males 30													
Average of ten females 33.5													
Maximum of ten females 41.5													
Minimum of ten females 31.5													

Comparison of these specimens with a very large series of adults taken at all seasons shows no sexual variation whatever in the plumage and very little difference in size. Winter specimens in new plumage are somewhat darker, while summer examples become much bleached, and the plumage worn to shreds, the rectrices having little left but their shafts. About a dozen of the specimens before me are more or less strongly washed with pale rusty yellow upon the under surface.

A young nestling (No. 3026, ♀, June 16, 1884, Fort Verde, Arizona; E. A. M.), in which the quills are only half grown out, has all of the markings of the adult. The throat, black stripe below the ramus of the jaw, and under tail-coverts are exactly as in adults; and the general plumage differs only in having a redder, rustier tone, most pronounced upon the auriculars, upper tail-coverts and tips of the rectrices. The abdomen is paler, almost whitish. Legs more plumbeous than in adults. This slight discrepancy in coloration is seen through a series of young specimens up to the period of the autumnal moult, when they come out exactly like their parents only fresher and darker, and can then only be distinguished from fully adult examples in fresh plumage by anatomical characters.

DIMENSIONS.—Male. Length, 305; alar expanse, 326; wing, 100; tail, 143; culmen from base, 38; culmen from nostril, 30; gape, 42; tarsus, 34; middle toe and claw, 30; claw alone, 8. Female. Length, 304; alar expanse, 317; wing, 98; tail, 142; culmen from base, 38; culmen from nostril, 30; gape, 41; tarsus, 33; middle toe and claw, 30; claw alone, 8.

HABITS.—I first met this Thrasher on March 24, 1884, about fifteen miles east of Prescott, when riding from Fort Whipple to Fort Verde, Arizona. When we left Whipple in the morning the ground was covered with snow; but a ride of a few miles, during which we descended several hundred feet, brought us to a changed climate. A few Crissal Thrashers were then occasionally noted among the thickets of scrub oak, and their numbers increased until we reached the Verde Valley.

The Red-vented Thrasher is abundant all over the Verde bottom land, preferring mesquite thickets and the vicinage of streams. One of the first traits that we noticed about it was that it possessed a song of very remarkable scope and sweetness, having all the power of the Mockingbird, and an evenness and perfect modulation which that bird may well envy. It is one of the few birds that truly sing; and it shares, in this Territory, this rare gift with its three congeners—Bendire's, Palmer's and Le Conte's Thrashers. It is no warbler of pretty ditties, nor yet a medley singer like the Eastern Thrasher or the Mockingbird, but discourses pure, natural music from the top of the tallest bushes, where it perches, with its tail hanging down, in precisely the same attitude as the Brown Thrasher of the East. Its season of

song is more protracted than that of any other species with which I am familiar. Its best efforts are put forth during the mating season, in February, March, and April; but, except during July and August, when the heat becomes intense and the Thrasher's plumage is bleached almost to whiteness, and worn to tattered shreds amongst the thorny chapparal in which it finds food and some shelter from the sun, it sings commonly throughout the year. The warm sunshine of a winter's day suffices to bring out its full song, which perchance has been hushed by a cold snap and flurry of snow. At first come a few notes of doubtful confidence, barely sufficing to remind one that it *can* sing; then a thoughtful, somewhat desultory song, till the power of the tropical sun asserts itself, or the genial influence of its mate is felt, when this harmonious soliloquy grows into a serene and dignified performance that challenges attention and excites admiration. The Crissal Thrasher is a shy bird, and only sings when it fancies itself secure from intrusions upon its solitude; but, about ranches, where it associates with man, it loses some of its wildness and becomes more confident and trusting. After the autumnal moult, when berries, grapes, and other acceptable food is plentiful, there is a distinct revival of song in this species. It has no loud call-note like the other species.

It is, like the rest of the Thrashers, highly terrestrial, and runs swiftly upon the ground from one bush to the next, often jetting its long tail upward. It mounts to the bush-tops to sing by hopping from branch to branch, and clambers through dense, spiny brushwood with surprising agility. In general it may be set down as a shy bird, though at times becoming quite familiar. It makes but little use of its short, rounded wings as a rule, but occasionally makes long flights across a cañon or valley, setting its wings and soaring, like Gambel's Quail.

Before the end of April young birds were seen that were already strong on the wing and appeared to be taking care of themselves, showing that this species breeds early. As is the case with many birds of this warm climate, its season of reproduction is unusually extended. I did not find its nest until the 3d of July, when one was found in a patch of sage-brush, built in a bush, close to the ground. Its presence was betrayed by the actions of the male bird. The female was sitting upon three eggs, but skulked off upon the ground, among the bushes, and was immediately lost sight of.

Another nest was discovered on June 14, in an isolated mesquite grove. It was placed upon a horizontal bough of a large mesquite-bush (*Prosopis* [*Algarobia*] *glandulosa*), where it made a conspicuous object, owing to its bulk and exposed position. It was well built and contained two eggs, resembling those of the Robin. The proprietors of this nest divided their attention between the care of their nest and a family of young not yet capable of shifting for themselves. Two days later this nest was taken with its full complement of four eggs, the female parent, and a pair of the young of the previous brood. The plumage of the latter is fresh and soft, contrasting strongly with the worn and faded feathers of the old bird. The only difference in the dress of the young in first plumage from the adult consists in the much darker tail, and brighter plumage generally, of the young bird. If any tangible differential characters can be assigned to the young, they may be summed up by saying that the tail and colors generally are darker and brighter, the markings more distinct, and the castaneous of the underparts nearly confined to the tail-coverts and crissum, instead of tingeing the abdomen as in adults. The irides, in birds just hatched, are whity-brown, gradually becoming paler, and finally assuming the yellowish color, which never becomes bright yellow even in adult birds. The tail of the parent exhibits an appearance which is common at this season: the central tail-feathers, being subjected to the effects of light far more than the lateral ones which they cover and protect when the tail is closed, are bleached to pale ashy-drab, quite different from the outer ones. The same is noted in the case of the White-winged Dove (*Melopelia leucoptera*) and other species in this land of perpetual sunshine. The eggs of this set are elongated oval in shape, rather pointed, and measure 29×20 , 29×19.5 , 30×20 , and 28×20.5 mm. respectively. The nest was coarsely made of heavy twigs without, and finer vegetable materials within.

The nest just described, and another containing four young about a week old, found in a dense haw-bush a couple of days later, are the only ones that I have examined containing so large a complement; and I am inclined to the opinion that three is the usual number.

For several months succeeding my arrival at Fort Verde, I studied the ornithology of the Valley without the aid of books, and had

in hand a fine suite of Red-vented Thrashers when my little library arrived; then I was astonished, on turning to Dr. Coues's 'Birds of the Colorado Valley,' to read at the commencement of his account of this species: "I have never seen the bird alive." This is a remarkable instance of the possibility of a common species being overlooked, even in the midst of its distributional centre; for I have repeatedly found it but a few miles from Fort Whipple (but at considerably lower altitude), where Dr. Coues was stationed at different times; and at Verde the species is always common, and nests each year in a patch of mesquite within a hundred yards of the quarters he occupied when Post Surgeon here.

On February 18, 1886, wishing to have a fresh example of this species in hand when writing its description, I had but to take my gun and stroll into the nearest mesquite thicket and shoot a specimen, which proved to be a female. When skinning it the next day, I suspected that it had already oviposited even at this early date, and upon dissecting it obtained positive proof that it had laid two eggs. The next morning I returned to the place where I shot the specimen, and immediately found its nest in the mesquite-bush whence it was first flushed two days before. The male parent was sitting upon the eggs, but slipped nimbly to the ground and ran out of view among the shrubbery, and was only secured after several visits made to the nest during the day. These specimens being in perfect plumage were selected for the types of the foregoing description. During the thirty days preceding the discovery of this nest, the lowest temperature of each twenty-four hours, taken with the minimum thermometer, averaged 32° F., with extremes of 24° and 42° F.; and the temperature for the same period, taken with the maximum thermometer, averaged 67° F., with extremes of 75° and 55° F. The nest was saddled upon the fork of a mesquite-bush, about four feet from the ground, in part supported by the thorny branches of a neighboring bush. It rested upon a pile of sticks, and was surrounded by a bristling array of spiny 'haw' and mesquite twigs of moderate size; within this barricade the nest proper was placed; it is bowl-shaped, and, with the exception of a few feathers, composed entirely of vegetable substances very neatly felted into a compact, warm nest. The principal materials are fine withered grass, stems of plants, and shreddy inner bark. Externally it measures 150 mm. in

height by 300 mm. in width; the internal depth, 45 mm.; internal diameter, 90 mm. The two eggs are uniform bluish-green, darker and greener than specimens that have been in my cabinet nearly two years, which have faded to a bluish tint resembling a Robin's egg. Thinking that the green color might be measurably due to the yellow yolk contained, I emptied one shell of its contents, after which it appeared to be even clearer greenish than before. The eggs measure 30×20 and 29×20 mm. respectively.

Crissal Thrashers inhabit by preference bushy places in the vicinity of water courses in the lower valleys, but range upward upon the oak-clad foothills to an altitude of 5000 feet, or in autumn occasionally even a little higher. The Verde Valley here has an altitude of 3,500 feet, and a much warmer climate than the bordering mesas and foothills, which in winter are often deeply covered with snow. Although they may be occasionally met with in the snow belt, most of them descend into the warmer valleys in severely cold weather. I have seen numbers of them feeding upon the bare sand upon the edge of the Verde River after a snowstorm. Making proper allowance for their being more conspicuous in winter on account of the absence of foliage, the species is undoubtedly far more plentiful in the Verde Valley during the winter season than in summer, when many of those which winter here move upward into the zone of scrub oaks, in which they breed in abundance wherever they can find water within a convenient distance. The exodus takes place about the end of February, after which the species becomes comparatively scarce; and by the middle of March nearly all of those remaining are settled and occupied with domestic affairs. In the surrounding highlands it breeds late in the spring. Nests were found upon the banks of Big Bug and Ash Creeks, at an elevation of nearly 5,000 feet, which contained fresh eggs as late as the middle of May. Some were built in oak bushes, and one conspicuously located in a swinging grape-vine six feet above the ground.

The Red-vented Thrasher is omnivorous. It feeds largely upon berries and wild grapes. A thorny species of 'haw' is plentiful along the Rio Verde, which bears an abundance of berries, of green, red, and dark glaucous-blue colors, according to the degree of maturity; upon these the Thrashers delight to feed. Insects constitute an important article of their diet at all seasons.

I found this Thrasher tolerably common in the vicinity of Fort Mojave in May, upon both the Arizona and Nevada shores of the Colorado, and also at the Needles farther down the River, in California, where the species has been taken as far south as Fort Yuma, opposite the mouth of the Gila River. Near the Colorado River, at the mouth of Diamond Creek, it was found later in the season; but, farther east along the Colorado Cañon, I did not meet with it. Even in the deep, warm cañon of Cataract Creek, where Mockingbirds were singing in November long after their departure from the Verde Valley, none were found. Dr. Palmer found it breeding at Saint George, in Southern Utah. It is very abundant in the Agua Fria Valley, west of the Rio Verde, and is found all the way to the confluence of that stream with the Gila River, from which point I have traced it as far eastward along the Gila as the mouth of the San Carlos River, near which many were heard singing among the dreary sandhills of the Indian Reservation, and thence northward through Tonto Basin. Others have found it along the Gila in New Mexico; but I have only noticed it farther east, about Deming, New Mexico, in the dry course of the Mimbres River, near the point where it was first discovered by Dr. T. C. Henry of the Army.

Unlike the three remaining species, it is rarely found in desert country away from streams. When crossing the hundred miles of desert between the Gila River near Maricopa and Tucson, it was not positively identified once, although I thought I saw one near Picacho Station, when returning in May. Along the Santa Cruz and Rillito Rivers, near Tucson and Fort Lowell, the species was again found in small numbers, and was abundant thence, in suitable localities, as far east as Bowie Station, where it was found to breed, as well as in the neighboring foothills of the Chiricahua Mountains, where I found a nest containing two newly-hatched young and an egg on the last day of April. The young were on wing in the dry plain of San Simon Valley below. From the abundance of this species there, I do not doubt that it ranges southward into Mexico.

***Harporhynchus lecontei*. LECONTE'S THRASHER.**

Toxostoma lecontei LAWR. Ann N. Y. Lyc. V, Sept., 1851, p. 109 (near Fort Yuma).—BAIRD, Stansbury's Rep. Expl. Gt. Salt Lake, Utah, 1853, p. 329 ("Gila River").

Harporhynchus lecontei BONAP., Comptes Rendus, XXVIII, 1854, p. 57; *ib.* Notes Orn. Delattre, p. 39.—BAIRD, U. S. Mex. Bound. Rep. 1859, Birds, p. 12, pl. 12.—COOPER, Proc. Cal. Acad. Nat. Sci. 1861, p. 121 (Mojave River, Cal.)—BAIRD, Review Am. Birds, 1864, pp. 47, 452 ("Gila River; Fort Yuma"). COUES, Pr. Phila. Acad. 1866, p. 65 (near Fort Mojave, Arizona).—COOPER, Am. Nat. III, 1869, pp. 188, 473.—BREWST. Bull. N. O. C. VI, 1881, pp. 66, 68 (5th specimen; taken 10 miles northwest of Phoenix, Arizona).—STEPHENS, *ib.*, p. 66.—BREWST. *ib.*, VII, 1882, pp. 70-75 (2 spec. taken by F. Stephens 15 miles W. Maricopa, Arizona).—STEPHENS, Auk, I, 1884, pp. 355-358 (Agua Caliente, Col. Desert, Cal.); *ib.*, Auk, II, 1885, pp. 229-231 (Sonora, Mexico).

Harporhynchus lecontii BAIRD, Birds N. Am. 1858, p. 350, pl. I; ed. of 1860, p. 350, pl. 50 ("Fort Yuma, Gila River").—SCL. P. Z. S. 1859, p. 339.—COOPER, Birds Cal. I, 1870, p. 17, fig. (Fort Yuma to Mojave River, Cal.).—COUES, Ibis, II, 1866, p. 259.—BREWST. Auk, II, 1885, p. 196 (near Port Lobos, Sonora, Mex.).

Harporhynchus redivivus lecontei COUES, Key, 1872, p. 75 ("only two specimens known." Near Fort Yuma, *Leconte*; near Fort Mojave, *Coues*).—COUES, Am. Nat. VII, 1873, p. 328.—BD., BREW., & RIDGW. N. Am. Birds, I, 1874, p. 44, pl. 4, fig. 3.—HENSH. List Birds Arizona, 1875, p. 154.—RIDGW. Catal. Birds N. Am. < Proc. U. S. Nat. Mus. III, 1880, p. 167; *ib.* Proc. U. S. Nat. Mus. V, p. 45.

Harporhynchus redivivus lecontii COUES, Check-List N. Am. Birds, 1882, p. 26; *ib.* Birds Col. Val. 1878, p. 70, fig. 12.—HOLTERHOFF, Bull. N. O. C. VIII, 1883, p. 48 (descr. nest and eggs from Flowing Wells, middle of the Colorado Desert, Cal.—*Cf.* Am. Nat. for March, 1881, where this 'find' is first described).

Leconte's Thrasher, Authors.

Yuma Thrasher, COUES, Birds Col. Val. 1878, p. 70.

DESCRIPTION.—*Adult in Spring* (No. 3857, ♀ ad., March 30, 1885, 6 m. N. of Maricopa, Arizona: E. A. M.; No. 4010, ♂ ad., May 11, 1885, between Casa Grande and Sweet Water, Arizona: E. A. M.). General color above pale ashy-drab; below much paler, tinged with ochraceous. Chin and upper part of throat, white, bordered by indistinct dusky submaxillary stripes. Cheeks and maxillæ whitish, with dusky spotting. The color is yellowish white in the median line below, shading very gradually to ochraceous upon the flanks, crissum, and under tail-coverts. The old, faded rectrices are brownish-drab; the new quills clear dark fuscous, having ashy tips and outer webs to the external feathers. The concealed bases of the feathers are plumbeous.

Young in perfect first plumage (No. 4009, ♂, May 11, 1885, near Casa Grande, Arizona: E. A. M.). Excepting the quills and upper tail-coverts, the coloring is scarcely darker than in adults taken at the same season; and new quills in adults are quite as dark as the fresh ones of the young. The markings are the same, there being no spotting anywhere. The tone is a trifle rusty upon the back; and the upper tail-coverts are light red-

dish-brown. The wings are clearer ashy than in faded adults, and all of the wing-feathers faintly edged with brownish yellow. The under tail-

TABLE III.—MEASUREMENTS OF *Harporhynchus lecontei*.

No.	Sex and Age.	LOCALITY.	Date.	Length.	Alar Expanse.	Wing.	Tail.	Culmen from Base.	Culmen from Nostril.	Gape.	Tarsus.	Middle Toe and Claw.	Claw alone.
3858	♂ ad.	Six miles north of Maricopa, Arizona	Mar. 30, 1885.	284	323	102	134	32	24	36	32	30	8
4010	♂ ad.	Between Casa Grande and Sweet Water, Arizona	May 11, 1885.	282	313	100	128	33	25	37	33	30	8
4031	♂ ad.	Desert Station, Arizona	May 14, 1885.	285	320	102	133	32	24	36	32	30	8
3857	♀ ad.	Six miles north of Maricopa, Arizona	Mar. 30, 1885.	280	310	95	127	33	24	38	32	29	8
3860	♂ ad.	Maricopa, Arizona	April 1, 1885.	283	316	101	133	33	25	37	31	28	8
4011	♀ ad.	Between Casa Grande and Sweet Water, Arizona	May 11, 1885.	274	311	95	120	33	25	37	32	29.5	8
4032	♀ ad.	Desert Station, Arizona	May 14, 1885.	272	310	97	124	30	22	33	30	29	8
4009	♂ juv.	Near Casa Grande, Arizona	May 11, 1885.	278	319	98	125	29	22	34	33	30	8
Average of three males.													
Maximum of three males													
Minimum of three males													
Average of four females													
Maximum of four females													
Minimum of four females													

coverts and anal region are paler. The tail is deep fuscous, inconspicuously tipped with rusty-ash. It presents the following dimensions: Length, 278; alar expanse, 319; wing, 98; tail, 125; culmen (chord), 29; culmen, measured from nostril, 22; gape, 34; tarsus, 33; middle toe and its claw, 30; the claw alone, 8.

A comparison of five adults with the two above described shows some variation in the shade of drab above, which is yellowish in the palest specimens—those taken latest in the season—and grayish in those in which the plumage is newer. The same is the case with the under plumage, which in one specimen is almost white, in others variously tinged with pale ashy-drab and ochraceous. The remiges are much paler than the other quills, and grayish. Most specimens exhibit a pectoral band contrasting with the white throat and pale color of the belly. The central rectrices, which appear to be usually moulted last, are in some specimens shortened and abraded, their pale drab color and worn condition being strikingly different from the new outer feathers. The irides are reddish-hazel. Bill plumbeous-black. Tarsi and feet varying from plumbeous-brown to greenish-olive; claws from dusky olive to plumbeous black.

DIMENSIONS.—Average of three males: Length, 254; alar expanse, 319; wing, 101; tail, 132; culmen (chord), 32; culmen from nostril, 24; gape, 36; tarsus, 32; middle toe and claw, 30; its claw alone, 8.2; graduation of tail, 16. Average of four females: Length, 277; alar expanse, 312; wing, 97; tail, 126; culmen (chord) 32; culmen from nostril, 24; gape, 36; tarsus, 31; middle toe and claw, 29; its claw alone, 8; graduation of tail, 17.

HISTORICAL RÉSUMÉ.—This Thrasher is at once the oldest and least known species of the genus in Arizona. Originally described by George N. Lawrence in 1851, from a specimen taken at the mouth of the Gila River, near Fort Yuma, it was not again met with by naturalists for a decade, when Dr. Cooper added it to the avifauna of California, stating that it was not uncommon in certain portions of the route between the Colorado Valley and the coast slope of California. It was so very wild that he could obtain but two specimens. He found an empty nest built in a yucca, similar to that of *H. redivivus*.

In 1865, Dr. Coues took a fourth specimen, in the month of September, near the Colorado River above Fort Mojave. The great work on North American Birds, by Baird, Brewer and Ridgway, treats of the subspecies *lecontei* before the original species, and adds nothing to previously published accounts.

The fifth specimen was taken by Mr. F. Stephens, on February 21, 1880, in Central Arizona, as reported by Mr. Brewster. He writes: "I took this specimen ten miles north-west of Phoenix. The locality was a bushy desert with large cacti.

At the time, it was singing in a similar manner to *H. palmeri*, only very sweetly. I should consider them excellent songsters. They do not mock other birds and the song is unlike that of *H. redivivus*." This bird and another seen near the same place were the only ones met with by Mr. Stephens in several years' experience, although he thrice traversed the route through California where Dr. Cooper found it; but he afterwards secured two more, on July 5, 1881, about fifteen miles west of Maricopa, Arizona, in a locality which he describes as follows: "Near the middle of 'Forty-five-mile Desert' between Maricopa Wells and Gila Bend. No cholla or other cactuses in the immediate neighborhood, but some giant cactuses about a mile away in the hills; a few mesquites and much scattered low brush in the vicinity; nearest water twenty miles away."

The nest and eggs of this rare species were discovered by Mr. E. Holterhoff, Jr., in the middle of the Colorado Desert, in California, at a station called Flowing Wells, and described in the 'American Naturalist,' Vol. XV, No 3, March, 1881.

In 1884, Mr. F. Stephens again found some of these Thrashers in the extreme western end of the Colorado Desert, about the end of March, and has given a very interesting account of this species and others (*cf.* Auk, 1, pp. 353-358, October, 1884) observed by him near Agua Caliente, California, in which he dwells upon its exceeding wildness, notes its lengthy breeding season, and describes its supposed nest, built in the centre of a cholla cactus.

The only extra-limital record of the occurrence of Leconte's Thrasher was published by Mr. William Brewster, in 'The Auk' for April, 1885, p. 196; and his notice was added to by Mr. Stephens,* who took the specimens about fifteen miles inland from Port Lobos, on the Gulf of California. In this article Mr. Brewster mentions "a dozen or more" specimens, including all of those collected by Mr. Stephens, as having passed through his hands. Eight specimens collected by myself, during the spring of 1885, brings the number of known specimens up to about two dozen.

HABITS:—Any one who traverses the desert between Phœnix and Maricopa will probably catch sight of at least one of these pallid Thrashes, but may consider himself fortunate if he

* Auk, II, July, 1885, pp. 229-231.

captures a single specimen. It was in this uninviting region that I first saw Leconte's Thrasher.

The ride from the Gila River to Maricopa, on March 30, 1885, was through a desert, bordered by distant foothills, along the base of which are forests of giant cacti, some of which were found along the road. A sluice of the Gila was crossed a few miles from the river, along which were some cottonwoods and a quantity of tulé (*Scirpus*) and cat-tails; also plenty of green grass, in which Meadow Larks, and Thrashers of some species, were singing, the latter in mesquites. The rest of the country was bare of grass, sandy, and covered with scattered sagebrush and cacti (*Opuntia*, *Echinocereus*, *Cereus*, and *Echinocactus*), with occasional bare areas of white sand, where the sun's reflection was terrible. A rare squirrel (*Spermophilus tereticaudus*) was here abundant; and all of our superfluous energy was expended early in the day, which was intensely hot, in capturing some of them. As we rode along in the condition of stolid indifference to everything, which ensues after the limit of human endurance is reached, numberless lizards and horned toads of varied hues sped unheeded from our trail, until the orderly riding behind me exclaimed: "Doctor, what are they!" and pointed with his carbine to a pair of whitish birds upon the sand, with their tails cocked up over their backs, which I saw at a glance were Leconte's Thrashers. This pair, both of which I shot, were the only ones seen that day. They ran and hid with as much agility and cunning as the Chapparal Cock. As I pursued them, some large white lizards scuttled into their holes at the side of a sandy arroyo, which, in the glare of the sun, resembled the Thrashers, than which they were scarcely more fleet, both running before me with great speed, and disappearing from view. They seldom arose from the ground, and then only skimmed over the brushwood a little way, and then ran swiftly on in zig-zags, amongst the bushes and cactuses. They were secured with great trouble and exertion, for which they were doubtless the more highly prized. The female's ovary showed that four eggs would constitute the complement, and that they would soon have been deposited.

As so frequently happens when once the ice is broken, my acquaintance with Leconte's Thrasher grew apace after this introduction. The following day was spent at Maricopa, at which

place I sincerely trust none of my readers may be required to sojourn, at the same season of the year, unless it be for the purpose of capturing some of these wild will-o'-the-wisps, in which case they could scarcely select a more favorable collecting ground; but, unless more fortunate than I was, their toil will be but ill requited. The region is a desert waste of sand, covered in places with patches of sagebrush and groves of cholla cactuses, with a few mesquites and shrubs scattered along the dry arroyos.

I left camp in company with Dr. Paul Clendenin in the early morning, and these Thrashers were heard singing soon after, and were hunted until we were completely exhausted from following them, but we were obliged to return to our tent without a single specimen. Perched upon a mesquite-top, one would sing so loudly that it could be distinctly heard for more than a mile,—long before it could be seen upon the open plain, and it was usually off to another more distant perch about the time that we discovered it. As the day advanced and the scorching sun rose high in the sky, the Thrashers one by one stopped singing, forsook the bare mesquites, and ensconced themselves among the sparse brushwood along the dry water-courses, where we surprised several of them; but they always managed to retreat so adroitly, whether by running among the bushes or flying close to the earth, that we were completely baffled at each attempt to shoot them. When flying they dropped low down, and performed a part of each flight in a tortuous course under cover of the sage brush, ascending to the top of a mesquite like a Shrike. Their flight is, therefore, very difficult to follow; moreover the singing of several birds in different directions added to our confusion and diverted our attention.

On April 1 we marched from Maricopa to Casa Grande. As before, the Thrashers were heard singing during the early morning. Their song is remarkable for its loud, rich tone, and is at least as fine as that of any other of the genus. Their speed when running upon the ground is truly wonderful. A pair of them were running upon the railroad, and for a little way kept ahead of our trotting horses with ease. One of them was afterwards shot upon a bush, whence its mate flew out at the report, and was brought down upon the wing, but was so fleet that we were unable to catch it. Although a number of them were seen, and every effort made to secure more specimens, only one was taken.

On the 3d of April, after passing the foot of Picacho Peak—a high castellated butte to the right, which for several days had been a prominent landmark—we rode through a grove of ‘sahuaras’ (*Cereus giganteus*), among which were many arborescent cacti, in which were found the nests of all three of the desert species of Thrasher. That of *H. lecontei* was built in a cholla cactus seven feet from the ground, and closely resembles another, to be presently described. It contained one egg, having a ground-color of greenish-blue of a deeper hue than in *H. palmeri*, sparingly spotted all over with brown and lavender, the spots largest at the great end, where they tend to accumulate and form a wreath near that extremity. It measures 19 × 29 mm. This is the most eastern point at which the species has yet been found.

When returning over this route, between Casa Grande and Sweet Water, on the 11th of May, I shot a young Leconte’s Thrasher; and when near Sweet Water took a pair of adults, and positively identified and secured their nest and three fresh eggs. They were first seen in the bush in which the nest was built, but flew out of sight when approached. After examining the nest, I concealed myself under a neighboring mesquite, in a position that was scarcely tolerable, on account of the burning heat radiated from the white sand. The sharp *whit* of the female kept me apprised of her whereabouts. At length, when I was almost roasted, she flew into the mesquite and almost immediately took her place upon the eggs. A chirping call from me quickly brought her to the top of the bush, where I shot her. With the male the case was different. It required a chase of an hour to secure him, and he would certainly have escaped were it not for his persistency in returning to the nest as often as lost sight of. His flight was often low, among the bushes, and impossible to follow with the eye; but, when soaring upward into a bush, he was usually detected. The sharply reiterated *whit*, or *quit*, also served me to keep track of him. At length I winged him at long range when flying, and then had an exciting chase upon the ground, shooting at him as I ran. His dexterity in running and hiding among the scattered greasewoods was admirable. This nest was placed in a mesquite, at a height of six or eight feet. It rested upon a fork and received additional support from a neighboring branch. It was composed of fine

grasses and weeds, the inner nest resting upon a mass of large sticks, loosely placed. The nest-lining was of grass and a few feathers. In shape the eggs are an elongated oval, tapering to a point at the small end, instead of being rather rounded and obtuse as in *H. palmeri*. Their ground-color is greenish-blue, somewhat deeper than in the egg of Palmer's Thrasher. One has large blotches of yellowish-brown and lavender sparingly scattered over the egg, a few extending nearly to the small extremity. In the others the marks are of the same colors, but reduced to fine spots, quite numerous, and confluent near the great end, but scarcely extending to the opposite extremity at all.

Leconte's Thrasher was seen at several points between Casa Grande and Phœnix during May, and was still singing. Upon the desert a few miles north of Phœnix I took a mated pair, on the 14th, in very nearly the same locality at which Mr. Stephens captured the fifth known specimen, in 1880. At this place, for the first and only time, I found all four of the Arizona Thrashers together.

[*To be continued.*]

THE NORTH CAROLINA MOUNTAINS IN WINTER.

BY CHARLES F. BATCHELDER.

ALTHOUGH of late years ornithologists have been ransacking nearly every accessible corner of this continent, they have, strangely enough, neglected the mountain region of the Southern Alleghanies. There seems to have been an impression that the birds of the Atlantic States were so well known that it would be idle to look for important discoveries there, where the fathers of our science had done their work, so the tide has been setting to the newer regions of the West. In truth, the earlier ornithologists were necessarily far from thorough in their explorations, and there have remained some corners of the field in which they worked where there is yet much to be gleaned. Such is the case with our southern mountains. Magazine writers have enlarged upon the beauties of their scenery, geologists and botanists have visited them, and have brought to light many interesting discov-